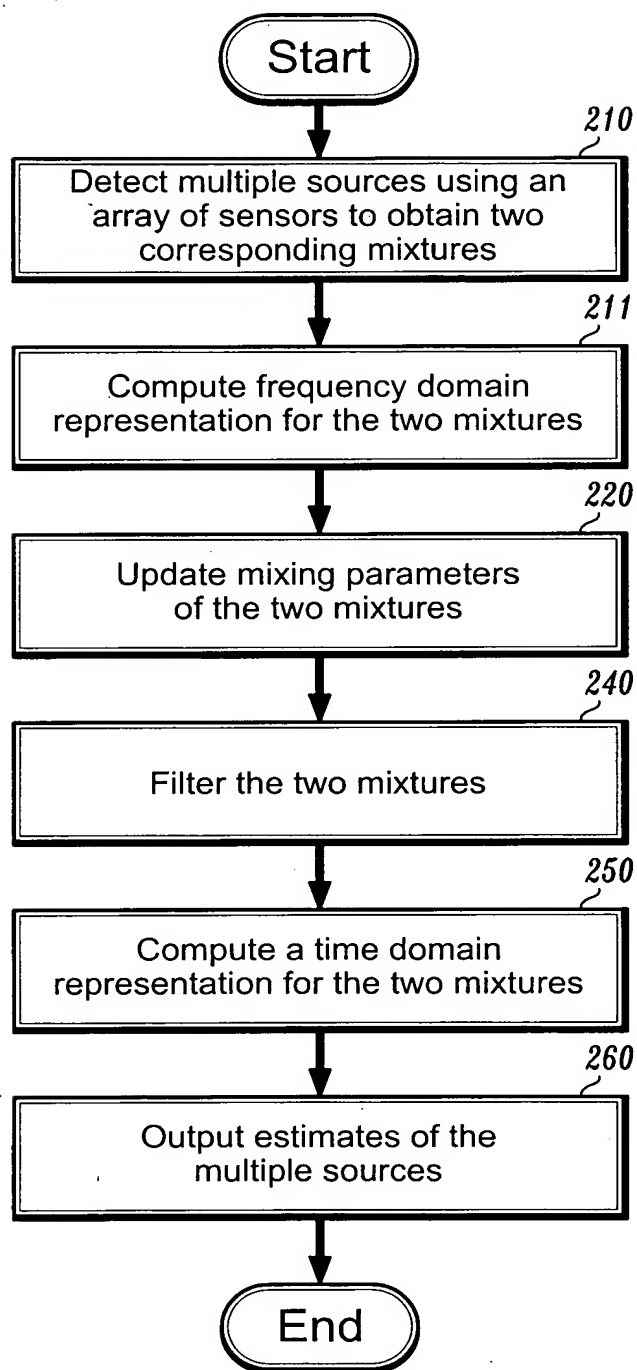


FIG. 1

**FIG. 2**

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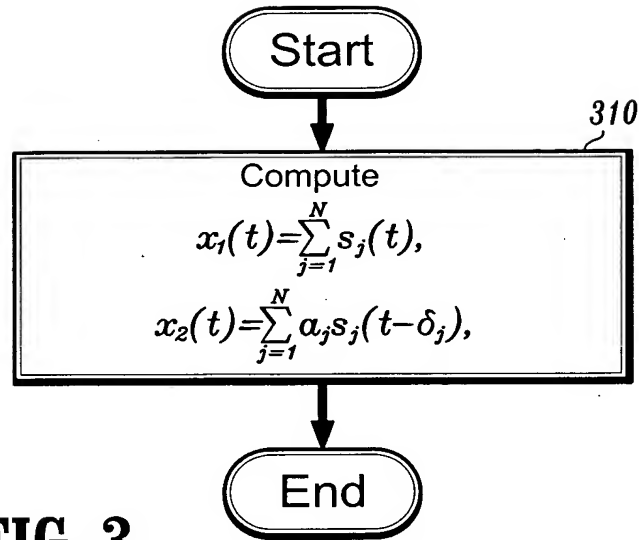


FIG. 3

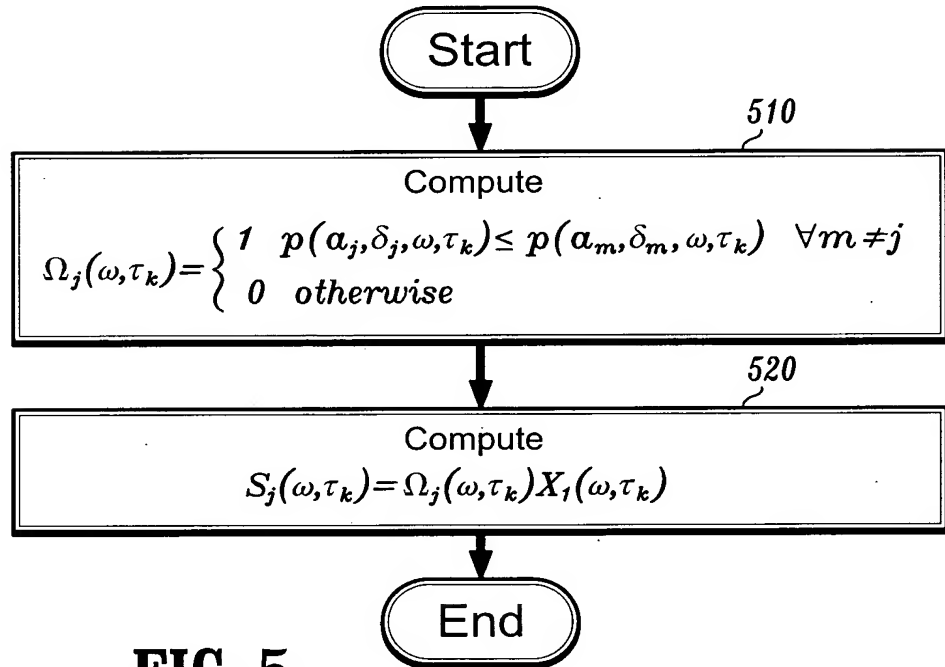


FIG. 5

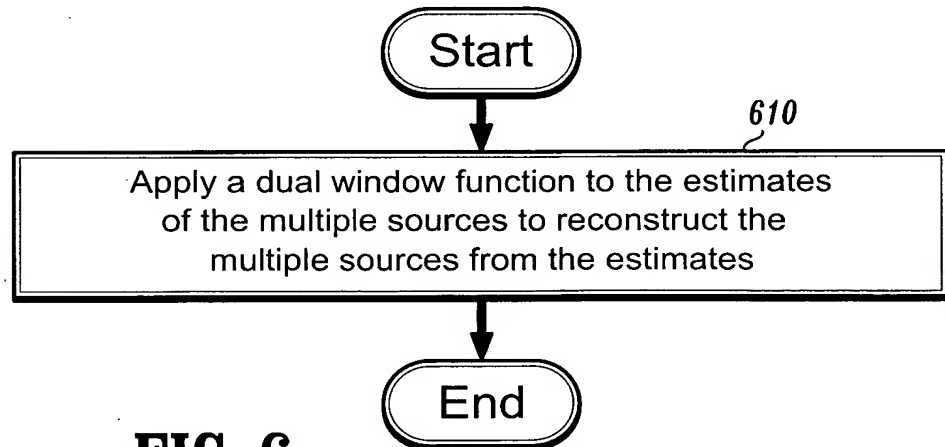


FIG. 6

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Start

Compute

$$p(a_j, \delta_j, \omega, \tau_k) = \frac{1}{1 + \alpha_j^2} \left| X_1(\omega, \tau_k) \alpha_j e^{-i\omega\delta_j} - X_2(\omega, \tau_k) \right|^2$$

Compute

$$\frac{\partial J(\tau_k)}{\partial a_j} = \frac{\sum_{\omega} \frac{e^{-\lambda p(a_j, \delta_j, \omega, \tau_k)}}{\sum_l e^{-\lambda p(a_l, \delta_l, \omega, \tau_k)}} \frac{2}{(1 + \alpha_j^2)^2} \left(((\alpha_j^2 - 1) \operatorname{Re} \left\{ X_1(\omega, \tau_k) \overline{X_2(\omega, \tau_k)} e^{-i\omega\delta_j} \right\} + \alpha_j (|X_1(\omega, \tau_k)|^2 + |X_2(\omega, \tau_k)|^2)) \right)}{\sum_l e^{-\lambda p(a_l, \delta_l, \omega, \tau_k)}} \frac{2}{(1 + \alpha_j^2)^2}$$

Compute

$$q_j[k] = \sum_{\omega} \frac{e^{-\lambda p(a_j, \delta_j, \omega, \tau_k)}}{\sum_l e^{-\lambda p(a_l, \delta_l, \omega, \tau_k)}} |X_1(\omega, \tau_k)| |X_2(\omega, \tau_k)|$$

Compute

$$\frac{\partial J(\tau_k)}{\partial \delta_j} = \sum_{\omega} \frac{e^{-\lambda p(a_j, \delta_j, \omega, \tau_k)}}{\sum_l e^{-\lambda p(a_l, \delta_l, \omega, \tau_k)}} \frac{-2\omega\alpha_j}{1 + \alpha_j^2} \operatorname{Im} \left\{ X_1(\omega, \tau_k) \overline{X_2(\omega, \tau_k)} e^{-i\omega\delta_j} \right\}$$

Compute

$$a_j[k] = \frac{q_j[k]}{\sum_{m=0}^k \gamma^{k-m} q_j[m]}$$

Compute

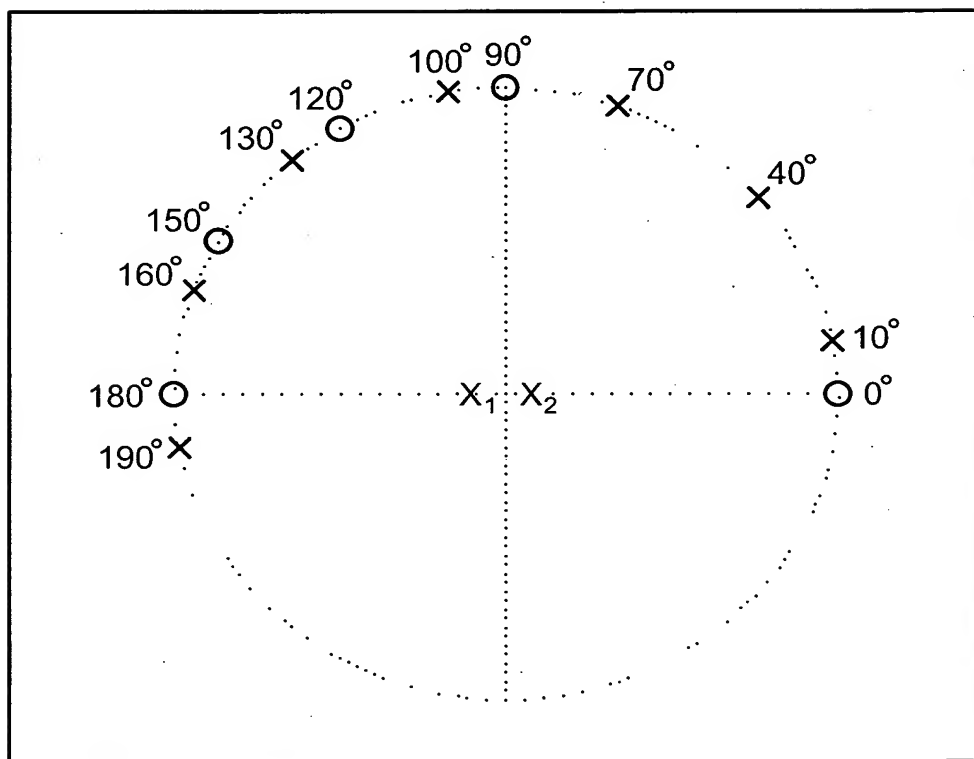
$$a_j[k] = a_j[k-1] - \beta a_j[k] \frac{\partial J(\tau_k)}{\partial a_j}$$

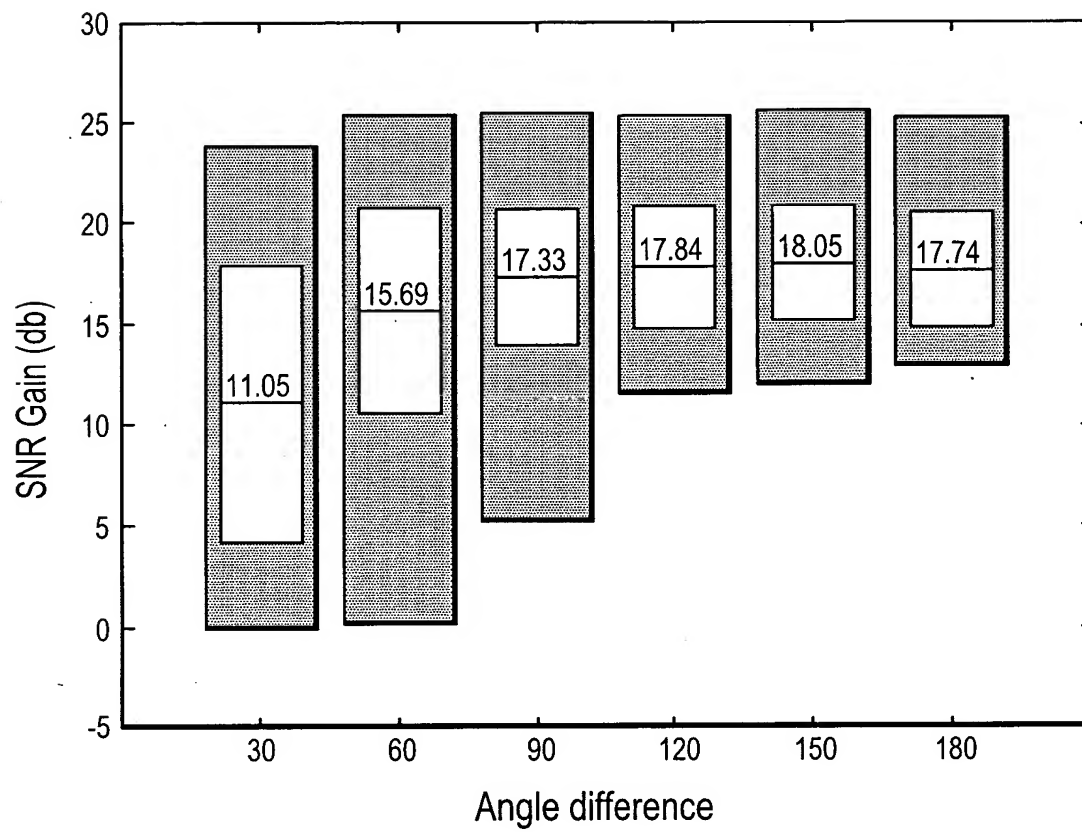
Compute

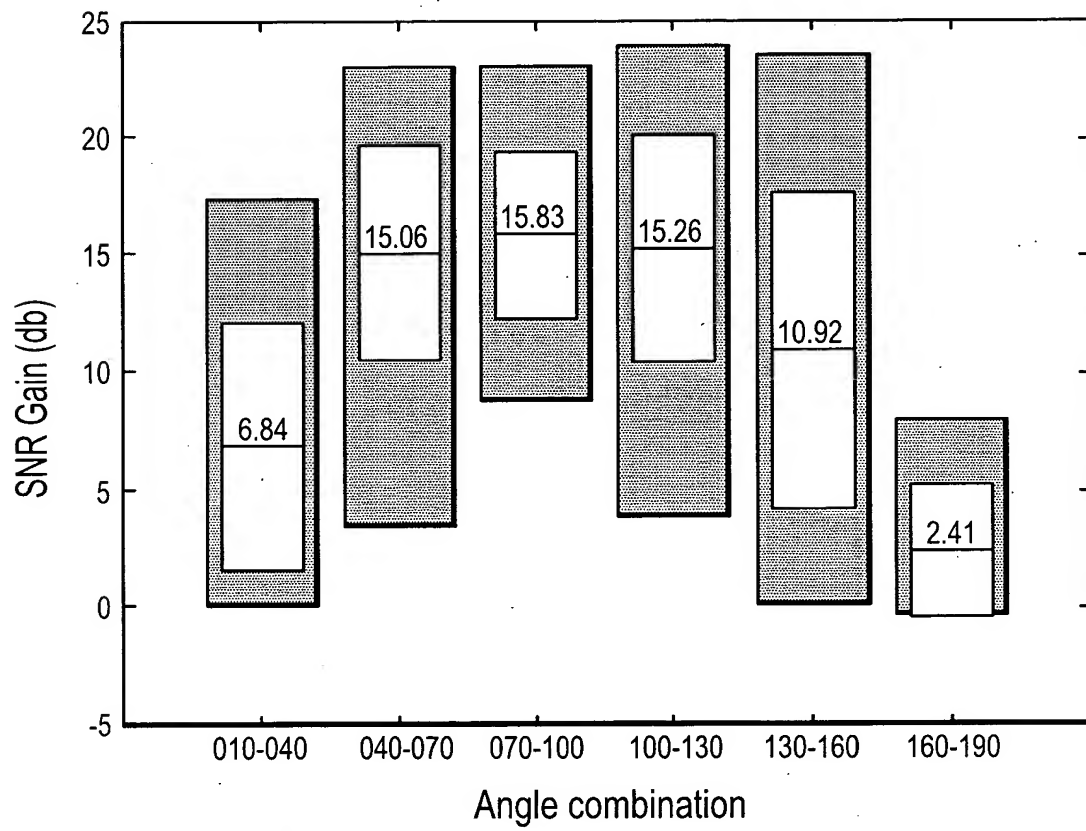
$$\delta_j[k] = \delta_j[k-1] - \beta \delta_j[k] \frac{\partial J(\tau_k)}{\partial \delta_j}$$

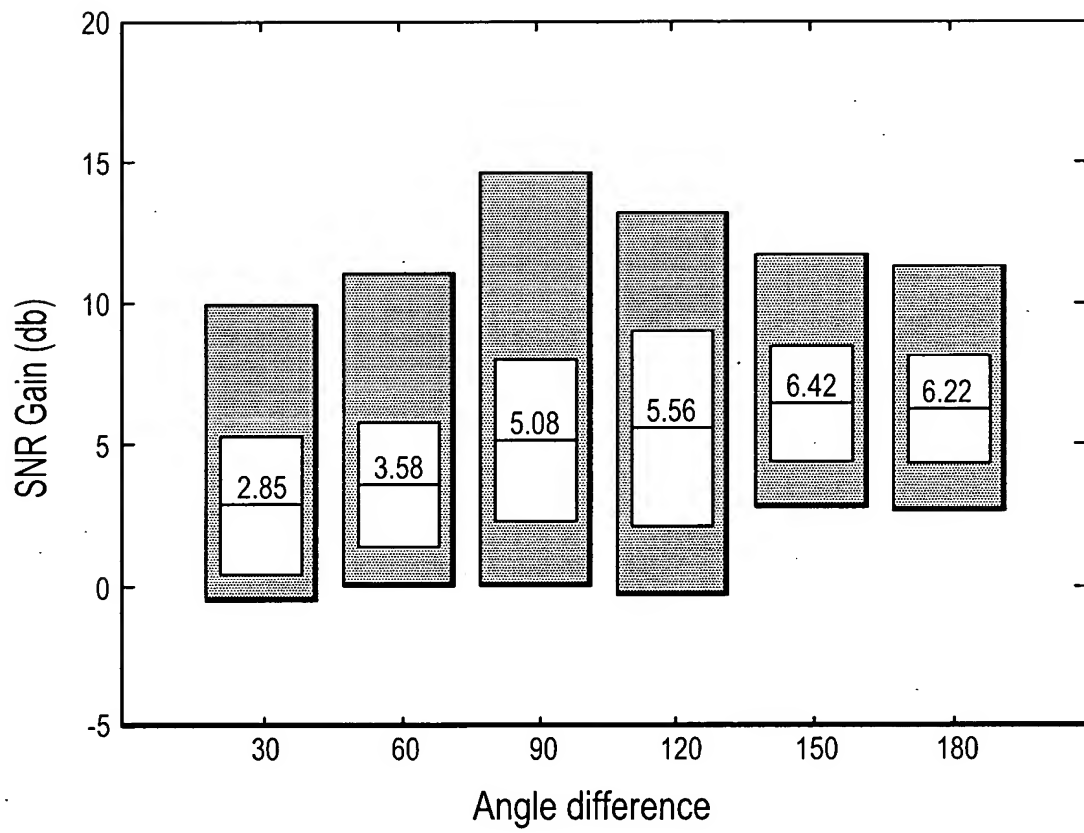
End

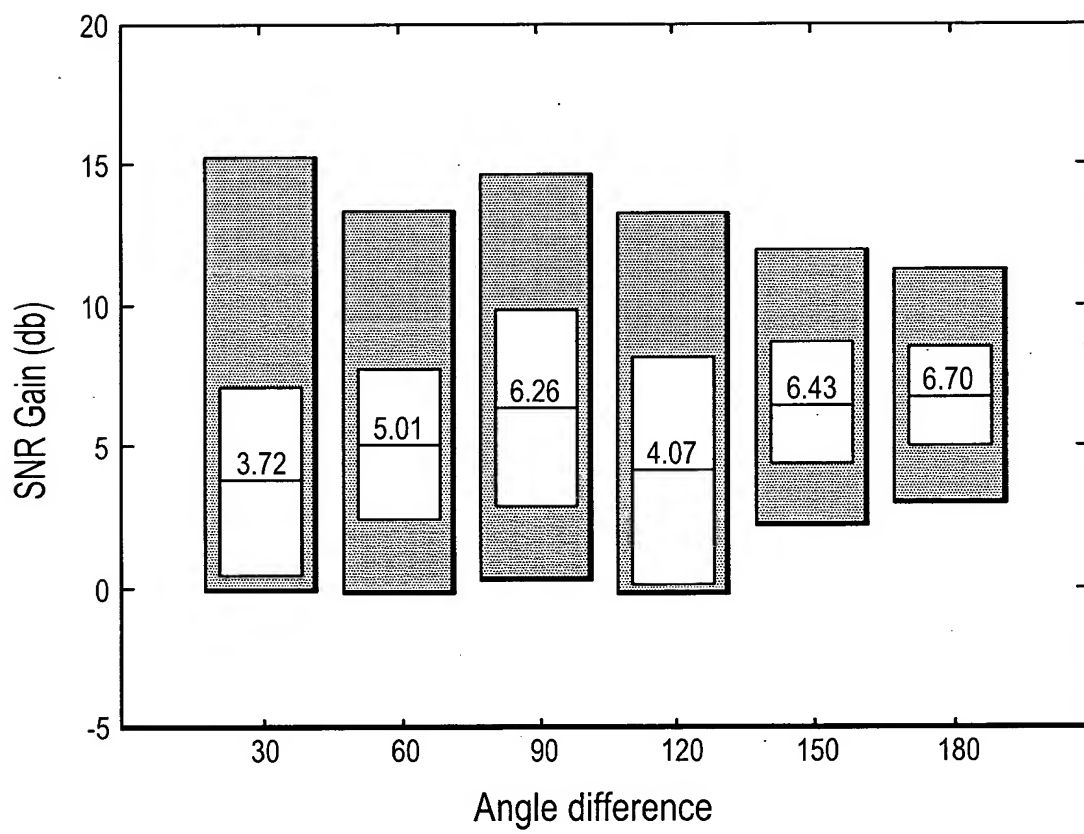
FIG. 4

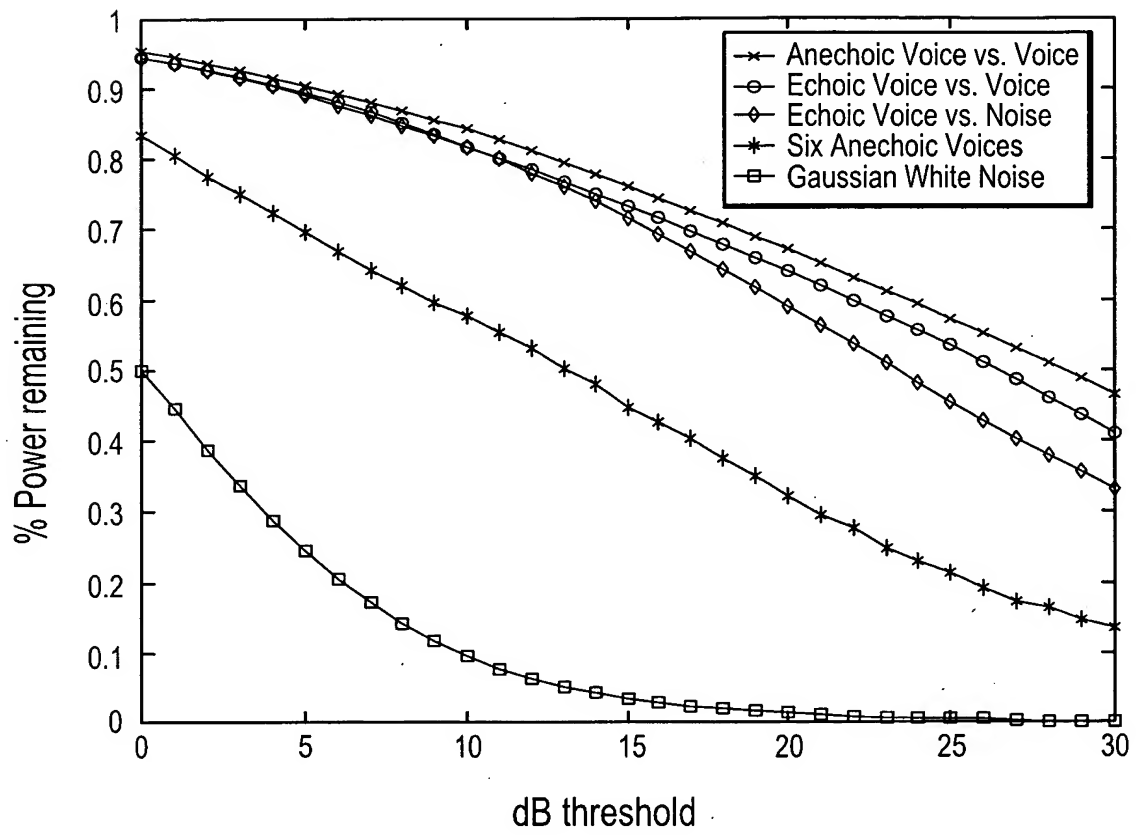
**FIG. 7**

**FIG. 8**

**FIG. 9**

**FIG. 10**

**FIG. 11**

**FIG. 12**